

Patent Claims

1. An apparatus (2) for checking in particular the authenticity and/or the nominal value of documents of value (BN) with luminescent feature substances (15), with an illuminating apparatus (7) for illuminating the document of value (BN), a sensor device (8) for measuring the luminescence radiation emitted by the illuminated document of value (BN), and an evaluation unit (6) for carrying out the checking on the basis of the measured values of the sensor device (8),

characterized in that

a plurality of measured values (Ka, Kb) of the luminescence radiation are captured along each of one or a plurality of measuring tracks (S1-S4) extending transversely across the document of value (BN), and the evaluation unit (6) carries out the evaluation on the basis of an integrated luminescence measuring (Ks), which is obtained by integrating the measured values (Ka, Kb) of the respective measuring track (S1-S4).
2. The apparatus according to claim 1, characterized in that the evaluation unit (6) obtains the integration of the measured values (Ka, Kb) by an addition of a plurality of discrete measured values (Ka, Kb) of the luminescence radiation and/or by a time-integrated measuring of the luminescence radiation.
3. The apparatus according to at least one of the above claims, characterized in that the evaluation unit (6) carries out the evaluation both on the basis of the integrated luminescence measuring (Ks), and not-integrated measured values (Ka, Kb) of the luminescence radiation corresponding to different spatial areas (18) of the measuring track (S1-S4).
4. The apparatus according to at least one of the above claims, characterized in that the evaluation unit (6) carries out an in particular broadband evaluation of the spectral distribution of the integrated luminescence measuring (Ks).

5. The apparatus according to at least one of the above claims, characterized in that the evaluation unit (6) carries out the integration both with respect to the spatial distribution and/or the spectral distribution of the luminescence radiation.
6. The apparatus according to at least one of the above claims, characterized in that the apparatus (2) can check documents of value (BN) having different luminescent feature substances (15a, 15b), which are contained individually or in combination in the document of value (BN), and the evaluation unit (6) is adapted as to be able to determine whether one of the different feature substances and/ or which of the different feature substances is contained in the checked document of value.
7. The apparatus according to at least one of the above claims, characterized in that the apparatus (2) has a transport apparatus (5) for transporting past the illuminating apparatus (7) and the sensor device (8), and the sensor device (8) can carry out the integrated luminescence measuring (Ks) along a track (S1-S4) extending in transport direction (T).
8. The apparatus according to at least one of the above claims, characterized in that the sensor device (8) measures along a plurality of parallel tracks (S1-S4), which overlap each other and/or are spaced-apart from each other.
9. The apparatus according to at least one of the above claims, characterized in that the total dimension (b_1+b_2) of all tracks (S1, S2) perpendicular to the integration direction (T) amounts to less or more than half of the total dimension (B) of the document of value (BN) in the same direction.
10. The apparatus according to at least one of the above claims, characterized in that the illuminating apparatus (7) produces a continuous illumination or a pulsed illumination with a plurality of pulses per track measuring.
11. The apparatus according to at least one of the above claims, characterized in that the sensor device (8) carries out a spatially resolved measuring in a direction perpendicular and/or in track direction (T).

12. The apparatus according to at least one of the above claims, characterized in that the sensor device (8) carries out a spectrally integrated measuring in a direction perpendicular and/or in track direction (T).
13. The apparatus according to at least one of the above claims, characterized in that the sensor device (8) has a plurality of sensors (8a-8d), each sensor being adapted to measure one individual track (S1-S4) corresponding to one area (17a-17d) of a coding.
14. The apparatus according to at least one of the above claims, characterized in that the sensor device (8) has a plurality of sensors (8a-8d), which have different spectral behaviors and/or the illuminating apparatus (7) has a plurality of light sources (7a-7d), which have different spectral behaviors.
15. The apparatus according to at least one of the above claims, characterized in that the evaluation unit (6) carries out a time-resolved evaluation of the integrated luminescence measuring (Ks).
16. The apparatus according to at least one of the above claims, characterized in that the evaluation unit (6) carries out the evaluation of the integrated luminescence measuring (Ks) in a wavelength range of more than about 800 nanometers, in particular more than about 1000 nanometers.
17. The apparatus according to at least one of the above claims, characterized by an additional nominal value sensor and/or an additional state sensor (9), the evaluation unit (6) carrying out the evaluation of the integrated luminescence measuring (Ks) taking into account the nominal value of the checked document of value (BN) determined with the help of the nominal value sensor or the state of the checked document of value (BN) determined with the help of the state sensor (9).
18. The apparatus according to at least one of the above claims, characterized in that the apparatus (2) is an apparatus (1) for counting and/or sorting and/or depositing and/or paying out bank notes (BN) and/or a handheld checking device.

19. A method for checking in particular the authenticity and/ or the nominal value of documents of value (BN) with luminescent feature substances (15), wherein the document of value (BN) to be checked is illuminated along at least one track (S1-S4) extending over the document of value (BN) and the checking is carried out on the basis of measuring the luminescence radiation emitted by the illuminated document of value (BN),

characterized in that

a plurality of measured values (Ka, Kb) of the luminescence radiation are captured along each of one or a plurality of measuring tracks (S1-S4) extending transversely across the document of value (BN) and the evaluation is carried out on the basis of an integrated luminescence measuring (Ks), which is obtained by integrating the measured values (Ka, Kb) of the respective measuring track (S1-S4).
20. The method according to claim 19, characterized in that luminescent feature substances (15) are checked which are incorporated in and/or applied onto the document of value (BN) in random distribution.